

REMARKS

Careful consideration has been given to the Official Action of August 11, 2006 and reconsideration of the application as amended is respectfully requested.

Claims 1,2, and 4 have been objected to under 35 U.S.C. 132(a) and rejected under 35 U.S.C. 112 first and second paragraphs, and amendatory action has been taken to correct the inadvertent typographical errors. The Examiner has assumed that the claimed alloy was still a Zn-Ni alloy as described in the specification as filed at, for example, page 4, lines 27-30, and this is now confirmed by the amendatory action now taken.

Claims 1, 2 and 4 have been rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over Usui in view of Ogishi, Romann, and with the teachings of Takeuchi.

Claim 1 has been amended to incorporate the subject matter of claim 4, which has been canceled.

The claimed invention is based on Applicant's finding that, in a piping member for an automobile fuel line, the claimed combination of coating layers provides unexpectedly advantageous benefits. In particular, as described on page 5, lines 23-31:

"A joining part provided with an O ring 15 of an injector 14 was pressed in the cup 12 of the fuel delivery pipe 10 coated with the three-layer film consisting of the plated Zn-Ni alloy film 16, the plated Zn film 18 and the trivalent chromate coating 20 as shown in Fig. 2. Resistance against the insertion of the injector 14 in the cup 12 was lower than that against the insertion of the injector 14 in a conventional cup coated with a coating film having a top

hexavalent chromate coating and the injector 14 could smoothly fitted in the cup 12.”

This is discussed in the specification at page 5, line 32 to page 6, line 35, and exemplified in the examples. In particular, the claimed invention as shown in Fig. 5 (compared to Figs. 6-8), provides significant advantageous effects compared with the Comparative Examples 1, 2 and 3. Specifically, the embodiment shown in Fig. 5 comprises a zinc-nickel bottom layer, an intermediate zinc film, and a trivalent chromate top layer. In contrast, the embodiments in Comparative Examples 1, 2, and 3 comprise a trivalent chromate coating formed over a plated zinc-nickel film, a hexavalent chromate coating formed over a plated zinc-nickel film, and a hexavalent chromate coating formed over a plated zinc-nickel alloy film similarly to the trivalent chromate coating of claimed invention, respectively (page 6, lines 3-26). As discussed in the specification and shown in Fig. 5, by having the recited coating layers, a protective coating having a smooth surface can be formed on a piping member provided with cups in which injectors are inserted by press fitting, which would reduce damages and breakage of O rings that are put on the injectors.

The advantageous effect of “a fuel delivery pipe provided with cups in which injectors are inserted by press fitting” in the present invention is realized by the following three layer constitution of the multilayer coating:

“ a plated Zn-Ni alloy film as a bottom layer,
a plated Zn film as an intermediate layer overlying the plated Zn-Ni alloy layer, and
a trivalent chromate layer as a top layer overlying the plated Zn film”.

It can be seen by referring page 5, line 32 to page 6, line 35 that these three layers totally can realize the advantageous effect of the present invention. Specifically, a protective coating having a smooth surface can be achieved by having a zinc-nickel bottom layer, an

intermediate Zinc film, and a trivalent chromate layer as a top layer, and each of the layers having the recited thickness.

In contrast, the cited references, either alone or in combination, do not show the multilayer coating having a zinc-nickel bottom layer, an intermediate zinc film, and a chromate top layer as recited in the claims or the advantageous effects that can be achieved thereby.

Usui ('107) discloses a coating having a zinc-nickel bottom layer, a chromate layer on the zinc-nickel layer, and a thermoplastic resin coating layer 5. Since Usui specifically requires a thermoplastic resin coating layer 5 as the top layer that overlies the chromate layer 4, it follows that Usui specifically teaches away from the claimed invention, which requires a trivalent chromate layer as the top layer. Accordingly, one skilled in the art would not combine Usui with Takeuchi. Moreover, there is respectfully no support in either Usui or Takeuchi for the Examiner's contention that "at least portions of the outer resin layer can be left off or removed at portions where connections are to be made" without the hindsight provided by the claimed invention. Furthermore, neither Usui nor Takeuchi teaches or suggests an intermediate zinc film between the zinc-nickel layer and the trivalent chromate layer.

Ogishi ('730) was cited for disclosing "metal substrates with coating layers including zinc, and zinc-nickel alloys and that either one layer can be provided or multiple layers of these different coating layers thereby teaching the addition of a zinc layer in combination with zinc-nickel alloy layer". However, it is respectfully submitted that such disclosure cannot be found in Ogishi.

✓ Ogishi discloses an organic coating comprising a steel plate having a zinc or zinc alloy plate layer which is overlaid with a chromate film which in turn is coated with an organic resin paint film (see first sentence of Abstract). The entire disclosure of Ogishi, including the examples and tables, is consistent with this combination (see for example, table 2-1 having three components: substrate plate, chromate film, and resin film), and there is no disclosure of an intermediate zinc film between a zinc-nickel base layer and a chromate top layer. It is further noted that Ogishi is similar to Usui in requiring an additional layer on top of the chromate layer and thereby teaches away from the claimed invention in which the chromate layer is the top layer.

The cups and injectors of Romann do not cure the deficiencies noted above in Usui, Takeuchi, and Ogishi.

Since none of the cited references discloses a coating having an intermediate zinc film between a zinc-nickel bottom layer on the one hand and a trivalent chromate top layer on the other, and since Usui and Ogishi both teach away from having the chromate layer as the top layer, a prima facie case of obviousness based on the references as cited cannot be established.

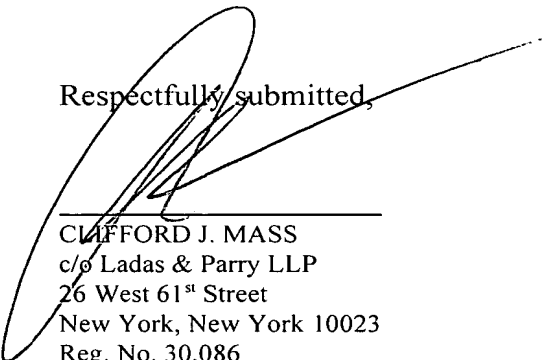
Even assuming for the sake or argument, that the references could set forth a prima facie case of obviousness, Applicant respectfully submits that the evidence of unexpectedly advantageous results in the specification (see discussion above) would be sufficient to rebut the prima-facie case of obviousness.

Moreover, since the cited art does not show or suggest the claimed combination of layers, it *a fortiori* does not show or suggest the claimed dimensions of the recited layers or

the result effective nature thereof. In this connection, it is settled that it cannot be obvious to optimize a parameter which the prior art does not show to be result effective. See MPEP 2144.05(II)(B) ("A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation.").

It is therefore respectfully submitted that the claims as now presented are in allowable condition and favorable reconsideration is earnestly solicited.

Respectfully submitted,



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